UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/414,384	10/07/1999	ANDREW CLARK	0037.00	3236

21968 7590 11/06/2008

NEKTAR THERAPEUTICS
201 INDUSTRIAL ROAD
SAN CARLOS, CA 94070

EXAMINER	
DIXON, ANNETTE FREDRICKA	
ART UNIT	PAPER NUMBER
3771	
MAIL DATE	DELIVERY MODE
11/06/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/414,384	CLARK ET AL.	
	Examiner	Art Unit	
	Annette F. Dixon	3771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 September 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *6 and 21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/3/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to the Board of Patent Appeals and Interferences decision, mailed September 19, 2008. In light of the Decision, an updated search was conducted and additional prior art references were identified and have been cited within this Office Action. Examiner acknowledges Claims 21-36 are pending in this application, with claims 1-20 having been cancelled. The finality of the last office action is withdrawn.

Information Disclosure Statement

2. The information disclosure statement filed June 3, 2008 fails to comply with 37 CFR 1.97(c) because it lacks a statement as specified in 37 CFR 1.97(e). It has been placed in the application file, but the information referred to therein has not been considered.

3. The information disclosure statement filed June 3, 2008 fails to comply with 37 CFR 1.97(c) because it lacks the fee set forth in 37 CFR 1.17(p). It has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 21, 24, 28, 32, 34, and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Piper et al. (5,479,920).

As to Claim 21, Piper discloses a device for controlling the delivery of an aerosolized active agent to the lungs of a human patient, said device comprising a valve (24) that provides a high flow resistance of at least 0.4 (cm $H_20)^{½}$/SLM at the onset of the patient's inhalation and that subsequently opens to provide a lower flow resistance, wherein the lower flow resistance allows for a higher flow rate through the device. Regarding the high and low flow resistance limitation, Piper discloses the valve (24) is an inhalation valve that closes and enables pressure to build up above atmospheric pressure during exhalation, and opens once the pressure upon the valve drops below atmospheric pressure during inhalation. (Column 4, Lines 25-35). Inherently, the nature of the valve to operate in response to pressure effects the operation of the valve and the resistance in the valve's operation. At the point at which the user of the breathing circuit begins to inhale, the resistance within the valve would be high as the pressure within the breathing circuit would be greater than atmospheric pressure and the valve is closed; however, subsequently as the user continues to inhale, the pressure within the breathing circuit would drop to below atmospheric pressure thus opening the valve and increasing the flow rate of the gas thru the valve.

As to Claims 24, 34, and 36, Piper discloses the high flow resistance when the valves are closed. Inherently, when the valves are closed the flow rate thru the valves are less than 15 liters per minute. Further, as addressed by Piper, during the initial stages of inhalation the pressure differential must be overcome to open the valves. Finally, regarding the values of flow rate, the flow rate of a patient's inhalation is a function of not only device but the patient's characteristics and overall health. In regards to the characteristics of the patient, the lung volumes of a neonate, child, adult, elderly and animals vary, in addition to the lung volume between genders. In regards to the overall health of a patient, if the patient suffers from a chronic lung disease such as asthma, emphysema, or COPD, the patient would not be able to provide as great of an inhalation flow rate as a healthy patient not suffering from a lung disease. Specifically regarding claim 36, at the first flow resistance the flow rate thru the device 0 liters/minute because the valves is closed; however, at the second flow rate when the valves beings to open as a result of the decreasing pressure differential the flow rate thru the device would be higher than the first flow rate.

As to Claim 28, Piper discloses a device for controlling the delivery of an aerosolized active agent to the lungs of a human patient, said device comprising a valves (24) that provides a high flow resistance at the onset of the patient's inhalation and which corresponds to a flow rate of about 15 liters per minute or less and that subsequently opens to provide a lower flow resistance, wherein the lower flow resistance allows for a higher flow rate. Regarding the high and low flow resistance limitation, Piper discloses the valves (24) is an inhalation valves that closes and enables

pressure to build up above atmospheric pressure during exhalation, and opens once the pressure upon the valves drops below atmospheric pressure during inhalation. (Column 4, Lines 25-35). Inherently, the nature of the valves to operate in response to pressures effects the operation of the valves and the resistance in the valves operation. At the point at which the user of the breathing circuit begins to inhale, the resistance within the valves would be high as the pressure within the breathing circuit would be greater than atmospheric pressure and the valves are closed; however, subsequently as the user continues to inhale, the pressure within the breathing circuit would drop to below atmospheric pressure thus opening the valves and increasing the flow rate of the gas thru the valve. Regarding the values of flow rate, the flow rate of a patient's inhalation is a function of not only device but the patient's characteristics and overall health. In regards to the characteristics of the patient, the lung volumes of a neonate, child, adult, elderly and animals vary, in addition to the lung volume between genders. In regards to the overall health of a patient, if the patient suffers from a chronic lung disease such as asthma, emphysema, or COPD, the patient would not be able to provide as great of an inhalation flow rate as a healthy patient not suffering from a lung disease.

As to Claim 32, Piper discloses a device for controlling the delivery of an aerosolized active agent to the lungs of a human patient, said device comprising a valve (24) that provides a first flow resistance at the onset of the patient's inhalation and that subsequently opens to provide a second flow resistance, the second resistance is less than the first resistance, wherein the second flow resistance allows for a higher flow rate through the device. Regarding the first and second flow resistance limitation, Piper

discloses the valve (24) is an inhalation valve that closes and enables pressure to build up above atmospheric pressure during exhalation, and opens once the pressure upon the valve drops below atmospheric pressure during inhalation. (Column 4, Lines 25-35). Inherently, the nature of the valve to operate in response to pressures effects the operation of the valve and the resistance in the valves operation. At the point at which the user of the breathing circuit begins to inhale, the resistance within the valve would be high as the pressure within the breathing circuit would be greater than atmospheric pressure and the valve is closed; however, subsequently as the user continues to inhale, the pressure within the breathing circuit would drop to below atmospheric pressure thus opening the valve and increasing the flow rate of the gas thru the valve.

6. Claims 21, 26, 27, 32, 33, and 36 are rejected under 35 U.S.C. 102(e) as being anticipated by Froehlich (5,865,173).

As to Claims 21, 32, and 36, Froehlich discloses a device for controlling the delivery of an aerosolized active agent to the lungs of a human patient, said device comprising a valve (16) that provides a first flow resistance at the onset of the patient's inhalation and that subsequently opens to provide a second flow resistance, the second resistance is less than the first resistance, wherein the second flow resistance allows for a higher flow rate through the device. Regarding the first and second flow resistances, a higher flow resistance results in a lower flow rate, while a lower flow resistance results in a higher flow rate. In the case of Froehlich, Froehlich discloses a breathing apparatus for conveying multiple flow rates to the patient. (Column 1, Lines 42-53).

During inhalation (IPAP), gases are conveyed to the patient at a high flow rate, wherein the resistance is low. However, during exhalation (EPAP), gases are conveyed to the patient at a lower flow rate, where the resistance is high. The amount of resistance experienced by the patient is a result of the operation of the valve (16). In relation to the claim language, at the initial onset of inhalation, the flow resistance is high and the flow rate is low. However, as the patient continues to inhale the result is a lower flow resistance and a higher flow rate made available to the patient for inhalation.

As to Claims 26, 27, and 33, Froehlich discloses the inhalation and exhalation cycles of the patient can both be set for 1.25 seconds. (Column 7, Lines 1-3).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 22, 23, 26, 27, 30, 31, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Piper et al. (5,479,920).

As to Claims 22 and 30, Piper discloses a high flow resistance when the valves are closed during the initial stages of inhalation, but does not expressly disclose the recited resistance values. Yet, Piper discloses the operational thresholds are a function of the resistance of the valves and may be varied. (Column 6, Lines 1-4). Therefore, the ability of the valves to be opened wider would increase the flow and the ability of the

valves to be closed tighter would decrease the flow; therein, creasing a result-effective variable by which the degree at which the device is opened or closed can be optimized as much as desired by the inventor. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the operational thresholds of the valves, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art and it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) and *In re Aller*, 105 USPQ 233, respectively.

As to Claim 23, Piper discloses low flow resistances when the valves are open once the pressure differential has been overcome during the subsequent stages of inhalation, but does not expressly disclose the recited resistance values. Yet, Piper discloses the operational thresholds are a function of the resistance of the valves and may be varied. (Column 6, Lines 1-4). Therefore, the ability of the valves to be opened wider would increase the flow and the ability of the valves to be closed tighter would decrease the flow; therein, creasing a result-effective variable by which the degree at which the device is opened or closed can be optimized as much as desired by the inventor. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the operational thresholds of the valve of Piper, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art and it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable

ranges involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) and *In re Aller*, 105 USPQ 233, respectively.

As to Claim 25, Piper discloses a high flow resistance when the valves are closed during the initial stages of inhalation, but does not expressly disclose the recited resistance values. Yet, Piper discloses the operational thresholds are a function of the resistance of the valves and may be varied. (Column 6, Lines 1-4). Therefore, the ability of the valves to be opened wider would increase the flow and the ability of the valves to be closed tighter would decrease the flow; therein, creasing a result-effective variable by which the degree at which the device is opened or closed can be optimized as much as desired by the inventor. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the operational thresholds of the valve of Piper, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art and it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) and *In re Aller*, 105 USPQ 233, respectively.

As to Claims 26, 27, 31 and 33, Piper discloses the high flow resistance, yet does not expressly disclose the length of time in which the high flow resistance is experienced. However, the length of time the high flow resistance is experienced by the patient is a function of the delivery device, the patient's characteristics and the patient's overall health, which all play a factor in the patient's ability to overcome the pressure

gradient within a recited time. In regards to the delivery device, Piper discloses the operational thresholds are a function of the resistance of the valves and may be varied. (Column 6, Lines 1-4). In regards to the characteristics of the patient, the lung volumes of a neonate, child, adult, elderly and animals vary, in addition to the lung volume between genders. In regards to the overall health of a patient, if the patient suffers from a chronic lung disease such as asthma, emphysema, or COPD, the patient would not be able to provide as great of an inhalation flow rate as a healthy patient not suffering from a lung disease. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the operational thresholds of the valves, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

9. Claims 25, 29 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Piper et al. (5,479,920) in view of Carris (4,227,522).

As to Claims 25, 29 and 35, Piper discloses a low flow resistance, yet does not expressly disclose the flow resistance corresponds to a flow rate between 15 and 80 liters per minute. However, at the time the invention was made the use of breath actuated medicament delivery devices utilizing the recited flow rates was known. Specifically, Carris teaches people having differing lung capacities and strengths may generate flow rates between 30 liters per minute to 120 liters per minute for the purpose of enabling the delivery of medicament from the drug delivery device to the patient.

Therefore it would have been obvious to one having ordinary skill in the art to modify the low flow resistance flow rates to incorporate the known range of patient flow rates, as taught by Carris, to ensure the actuation of the drug delivery device.

10. Claims 24, 25, 28, 29, 31, 34, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Froehlich (5,865,173).

As to Claims 24, 25, 28, 29, 34, and 35, Froehlich discloses the inspiratory positive pressure airway pressure is higher than the expired positive airway pressure, yet Froehlich does not expressly disclose the recited flow rates for each flow resistance. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the operational thresholds of the valves, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art and it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) and *In re Aller*, 105 USPQ 233, respectively.

As to Claim 31, Froehlich discloses the inhalation and exhalation cycles of the patient can both be set for 1.25 seconds. (Column 7, Lines 1-3).

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Newhouse (5,201,308) additional inhalation device for delivering

medicament that discloses the operational flow rate ranges for actuation medicament delivery.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Annette F. Dixon whose telephone number is (571) 272-3392. The examiner can normally be reached on Monday thru Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Justine Yu can be reached on (571) 272-4835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Justine R Yu/
Supervisory Patent Examiner, Art Unit 3771

/Annette F Dixon/
Examiner, Art Unit 3771

/DONALD HAJEC/
Director, Technology Center 3700